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SOCIETY 5.0 EDUCATION TO ESTABLISH CAREER PREPARATION FOR THE FUTURE

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ABSTRACT

The unrealized transformative capacity of artificial intelligence in the realm of education remains substantial. Current implementations often reinforce prevailing inequalities and fail to deliver genuine personalization. Nevertheless, the scenario is intricate, as the impact of AI on innovative pedagogical methods, language learning, and research-oriented disciplines is considerable. The incorporation of gamification within educational environments has the potential to enhance students' motivation, engagement, and performance, thereby meeting the demands of the 21st century. It is essential for educators to have the requisite knowledge and training to successfully incorporate gamification into their instructional methods. Nevertheless, they have raised concerns about inadequate funding, alignment with the curriculum, time limitations, access to technology, and the assessment of student performance. To tackle the existing knowledge deficit regarding essential soft skills necessary for effective project management within an Industry 5.0 framework. Industry 5.0 signifies a shift towards a more sustainable and socially responsible industrial future. It seeks to transcend conventional profit driven models by emphasizing human centricity, environmental sustainability, and social well-being. To effectively implement Industry 5.0, a holistic strategy is necessary, one that considers both technological innovations and the social and environmental consequences of industrial transformation.

KEYWORDS: Career preparation; Society 5.0 education; Optimal Learning; Future Career.

1.0 INTRODUCTION

A fundamental element of Industry 5.0 is its focus on social sustainability and sustainable development. It aims to empower the workforce through fair and inclusive training and

development initiatives, while also prioritizing worker well-being, technological adaptation, and sustainability. The tenets of social sustainability, including investment in human needs and the upholding of human rights, are in harmony with the goals of Industry 5.0, thereby enhancing the overall sustainability of both civilization and the planet. The upskilling and reskilling of the workforce are vital for the successful implementation of Industry 5.0. The swift pace of technological progress requires significant investment in talent development, especially in fields such as AI, which are essential for the AI-driven industrial revolution. The changing environment of Industry 5.0 necessitates ongoing learning and the ability to adapt to new knowledge and skills. Industry 5.0 signifies a crucial shift within the industrial landscape, merging human-centric principles with technological innovations. It transforms the dynamics of work, placing a strong emphasis on social sustainability and sustainable development as key factors in shaping career trajectories. The demand for equitable workforce training, which prioritizes the well-being of workers in conjunction with technological adaptation, is essential. The swift progression of technological advancements necessitates substantial investment in talent development, highlighting the importance of upskilling and reskilling the workforce, as well as the need for ongoing learning to address these emerging challenges. It promotes the establishment of inclusive and comprehensive training programs that respond to the varied needs of the workforce. Effectively tackling challenges while capitalizing on opportunities for social and environmental sustainability is vital for the success of Industry 5.0 (Gamberini & Pluchino, 2024) (Lau & Yip, 2020; Wirawan Panoedjoe Soebagyo & H S, 2021).

Artificial intelligence (AI) appears to hold significant promise in the realm of higher education by providing tailored learning experiences and enhancing student engagement. Nevertheless, it remains to be seen whether the influence of AI mirrors historical trends in the integration of technology within education, which may be limited and shaped by various educational or research "functions," or if this technological and scientific advancement indicates a more profound transformation within higher education. This article delves into the intricacies of AI in education, distinguishing between promotional claims and actual outcomes. It investigates the function of AI in redefining knowledge and learning, while cautioning against the potential erosion of critical methodologies. The transformative potential of AI in education is still largely unfulfilled. Present applications tend to perpetuate existing disparities and do not achieve true personalization. However, the situation is complex, as AI's effects on innovative teaching, foreign language acquisition, and research-focused fields are significant (Ruano-Borbalan, 2025).

The swift advancement of information and communications technology (ICT) has significantly altered both education and society. The implementation of gamification in educational settings can boost students' motivation, engagement, and performance, aligning with the requirements of the 21st century. Educators must possess the knowledge and training necessary to effectively integrate gamification into their teaching practices. However, they have expressed concerns regarding insufficient funding, alignment with the curriculum, time constraints, access to technology, and the evaluation of student performance. In light the researchers recommended that teachers receive training and resources to fulfill the expectations of Society 5.0 and contribute to a society centered around human needs. Society 5.0 envisions the incorporation of advanced technologies, including artificial intelligence (AI), the Internet of Things (IoT), and robotics, into all facets of life. It

emphasizes a human-centered society that seeks to balance economic advancement by addressing social issues through technology. In the context of education, the term 'readiness for Society 5.0' pertains to equipping educators with the necessary skills and knowledge to teach in a technology-driven environment, highlighting the importance of critical thinking, problem-solving, digital literacy, and adaptability. This level of preparedness is vital, as Society 5.0 aims to bridge the divide between the digital and physical realms, necessitating educators who can adeptly navigate technological systems while maintaining a human-centric approach in their teaching. Consequently, the integration of gamification within the educational landscape is essential for nurturing the next generation of innovators and socially responsible citizens. The concept of 'gamification' was first introduced in 2002, but its application in education and academic research began to gain traction in the latter half of 2010. Over the past decade, the incorporation of gamification has become increasingly significant in educational contexts (Amjad et al., 2025) (Lee et al., 2024; Opata et al., 2020).

The rapid shift from Industry 4.0 to Industry 5.0 has significantly altered the realm of project management. Industry 4.0 refers to the digital transformation within manufacturing, which is realized through the integration of cyber-physical systems, the Internet of Things (IoT), and data analytics. These elements work together to create smart, interconnected, and efficient production processes. This progression highlights the importance of merging these technologies with others, including artificial intelligence (AI), while also emphasizing sustainability and the collaboration between humans and machines. As a result, there is an urgent need for project managers who possess specialized skills. In particular, there is a considerable necessity to understand the unique set of soft skills required for effective human-centered project management in the digital age, as indicated by the paradigm (Santos et al., 2025).

Despite this, the global higher education sector has encountered a variety of challenges in recent years, including a decrease in student enrolment, rising operational expenses, and the need to adapt to changing technological and educational requirements, which are among the most urgent concerns (Mpofu et al., 2024).

The problem statement and objective of this study are as follows: 1. The influence of artificial intelligence on innovative teaching methods, language acquisition, and research-focused fields is significant. 2. Challenges include insufficient funding, alignment with the curriculum, time constraints, and access to technology. 3. There is a shortfall in essential soft skills required for effectiveness within the context of an Industry 5.0 framework. The urgency of research should emphasize the need for exploration, particularly in the context of higher education, which has undergone a transformation due to the advent of personalized learning experiences and improved student engagement. Education in Society 5.0 aspires to establish an optimal learning environment and prepare students for prospective career paths.

2.0 THE INTEGRATION OF TECHNO-DIGITAL SCIENCES AND INDUSTRIES

Industry 5.0 signifies a crucial transformation from its predecessor, Industry 4.0, by incorporating a wider purpose that includes social and environmental factors, emphasizing the well-being of workers, and striving for a sustainable and resilient industrial framework and latest industrial

revolution arose as a reaction to the growing automation and the displacement of human labor from manufacturing processes, which characterized Industry 4.0. **Industry 5.0 aims to rectify these deficiencies by promoting the reintegration of human workers, for example, in conjunction with robots and collaborative robots**, thereby merging the capabilities of humans and machines and Industry 5.0 emphasizes the **combination of human creativity and expertise with the efficiency and intelligence of machines**. It advocates for collaboration and coexistence between humans and machines instead of replacing humans with automation. The foundational elements of **Industry 5.0 consist of human centricity, sustainability, and resilience** and these three pillars steer the transition towards Industry 5.0, enhancing the technology-driven advancements of Industry 4.0 with a more comprehensive viewpoint that prioritizes societal objectives and the welfare of workers. From this standpoint, it "complements and extends the hallmark features of Industry 4.0 and Techno-digital sciences and industries, along with contemporary A.I., are perceived in popular culture, industrial-managerial ideologies, and narratives of science fiction as indicative of a potential new era due to their influence on daily life and work activities. It is important to note that this perception varies significantly across different cultural and linguistic contexts (Cave & Dihal, 2023, Gamberini & Pluchino, 2024) (Goswami & Narayanan, 2023; Thome et al., 2019).

Thus, while technologies may not align with the narratives and predictions that have been made, they nonetheless play a crucial role. They directly influence modern "ways of knowing," which encompasses not only the transformation of knowledge and cultures accompanying the so-called industrial "third or fourth modernity" (industry 4.0 and 5.0) but also significantly shape the conceptions and approaches to training and learning activities. Higher education is under **considerable pressure to integrate and advocate for AI in research, training, and administrative functions**. Numerous reports and commentaries highlight that AI is anticipated to personalize learning experiences, automate administrative responsibilities, and bolster research efforts. In research-intensive fields, particularly at the Master's and PhD levels, the effects of AI are more pronounced, potentially enhancing productivity and educational outcomes. In discussions regarding the influence of AI on education, especially higher education, the focus tends to be on the promises it holds rather than the potential threats or uncertainties associated with its rapid advancement, although the challenges are not overlooked. Many scholars and reports begin by acknowledging that AI is already instigating significant changes and will continue to do so at an increasing rate. Nevertheless, the realization of these benefits hinges on the commitment to maintaining critical thinking skills and academic integrity as central elements of the transformation that many analysts are observing or advocating for. Regardless of whether AI remains generative and narrowly focused as it is currently or evolves into a more versatile tool, education must, in all respects, promote creativity and enhance problem-solving abilities (Ruano-Borbalan, 2025).

Industry 5.0 technology integrates both physical and network process levels. Supplier collaboration portals and digital platforms ensure effective communication and cooperation within Industry 5.0. Intelligent products facilitate direct interaction with machines, while machine-to-machine tools promote collaboration among these machines. Technologies such as blockchain provide extensive visibility throughout the process, which is essential for making both proactive and reactive decisions. Artificial Intelligence and big data analytics are employed for programming and

managing decision-making support. The emergence of 6G technology has the potential to significantly enhance the efficiency, robustness, and agility of supply chain operations, delivering faster, more reliable, and more intelligent communication and data processing capabilities. Collaborative robots, or cobots, enhance manufacturing and logistical operations by boosting their flexibility and efficiency. They streamline supply chain management processes, including systematic inventory control, stock tracking, order fulfillment, and product returns. Cobots enhance manufacturing and logistical operations by increasing flexibility and efficiency. They optimize supply chain management processes, including systematic inventory control, stock tracking, order fulfillment, and product returns, thereby aiding supply chain sectors in minimizing their overall cost of ownership (Nazarian & Khan, 2024) (Jiang et al., 2023; Lambiase et al., 2013).

3.0 GAMIFICATION WITHIN THE EDUCATIONAL LANDSCAPE

Gamification facilitates the utilization of various tools, mechanisms, technological components, and game-oriented cognitive processes to improve students' engagement in class and their motivation to reach specific behaviors, thereby enhancing their learning and problem-solving abilities. The integration of gamification entails the application of games to address real-world challenges, and game-based learning has recently emerged as a widely adopted medium due to its captivating and exhilarating features. Games leverage their intrinsic playful qualities to effectively engage and motivate participants. Nevertheless, the effectiveness of gamification is significantly dependent on the interest and expertise of educators. The insights gained through gamification provide a valuable comprehension of its role across all educational levels, demonstrating that gamification is a powerful pedagogical strategy that can complement other teaching methodologies, such as flipped learning, project-based learning, cooperative learning, and problem-based education. Gamification represents a specific approach that can be integrated with other methodologies, facilitating the incorporation of a practical learning framework (Amjad et al., 2025).

In other hand, the modern world is characterized by an environment where digital technologies serve as a foundation, impacting every facet of human existence. Enhanced connectivity enables real-time communication, effectively dismantling geographical and cultural barriers. This interconnectedness is propelled by digital platforms that amalgamate various technologies, resulting in a seamless integration of digital and physical resources. Nevertheless, the digital realm also introduces challenges, including the digital divide and environmental issues stemming from increased carbon footprints. Tackling these challenges necessitates inclusive policies and sustainable practices to guarantee equitable access and mitigate negative impacts. Furthermore, in a digital landscape, project managers are tasked with overcoming resistance to change while addressing security and privacy concerns. The swift transition from I4.0 to I5.0 signifies a notable transformation in the industrial sector, instigating significant alterations in project management methodologies. Initially centered on predictability and control, contemporary project management approaches now prioritize flexibility, responsiveness, and digital integration. Project managers are required to cultivate expertise in a range of advanced technologies to maintain a competitive edge. Mastery of blockchain, the Internet of Things (IoT), and artificial intelligence (AI) is increasingly vital as these technologies transform project management practices by enhancing decision-making, risk management, and resource allocation, thereby improving project execution efficiency. The utilization of data-driven decisionmaking strategies, such as real-time analytics, predictive

modeling, and digital twins, is essential for optimizing project performance, decision-making, and overall efficiency. Focusing on a human-centric approach and sustainability, project managers operating within an I5.0 framework must find a balance between technological advancements and the human elements of project management (Santos et al., 2025).

4.0 CRUCIAL SOFT SKILLS REQUIRED FOR SUCCESSFUL IN THE CONTEXT OF INDUSTRY 5.0 FOR FUTURE CARRIER

The swift transition from Industry 4.0 to Industry 5.0 has profoundly transformed the landscape of project management. I4.0 pertains to the digital transformation of manufacturing, achieved through the integration of cyber-physical systems, the Internet of Things (IoT), and data analytics, which collectively foster smart, interconnected, and efficient production processes. This evolution emphasizes the amalgamation of these technologies with others, such as artificial intelligence (AI), while also prioritizing sustainability and collaboration between humans and machines. Consequently, there is a pressing demand for project managers equipped with specialized skills. Specifically, there is a significant requirement to comprehend the distinct set of soft skills necessary for effective human-centered project management in the digital era, as suggested by the paradigm. As underscored, adapting to the digital transformation of processes and management paradigms is essential for sustaining business competitiveness in both current and future technological and societal contexts. Nevertheless, project managers must cultivate skills that empower them to navigate both technological advancements and the human-centric aspects of soft skills in project management, which remains inadequately explored. To bridge this gap, our research employs the psychological construct of **Social, Emotional, and Behavioral (SEB) soft skills**, framed within the theoretical frameworks of the Big Five Personality Traits theory and Schwartz's Values theory. Therefore, our study broadens the application of theoretical constructs related to non-technical skills within the realm of project management. Furthermore, contribute to the existing literature by illustrating that the professional identity of project managers, **shaped by personal values and personality traits, is evolving in tandem with the soft skills necessary for effective project management** (Hong, 2016; Koh et al., 2022) (Santos et al., 2025).

Figure 1. Self-Management Skill Involved

Essential soft skills necessary for success within the framework of Industry 5.0 for Future Careers, as illustrated in Figure 1 above, should encompass the following: firstly, SM Skills which include task management, time management, detail management, organizational skills, responsibility management, the ability to maintain consistency, and goal regulation. Additionally, rule-following skills and decision-making skills are crucial. Secondly, social engagement skills (SES) are required, which involve leadership, persuasion, conversation, and expressiveness. Thirdly, innovation skills are vital, comprising abstract thinking, creativity, artistic ability, and cultural competence. Fourthly, emotional resilience skills are important, which include stress regulation, the capacity for optimism, anger management, and confidence regulation. Lastly, cooperation ethics are essential, which involve teamwork, the ability to build trust, perspective-taking, and fostering social warmth.

The skills associated with SEB are theoretically based on the Big Five Personality Traits theory (Soto et al., 2021), which includes openness to experience, extraversion, conscientiousness, agreeableness, and neuroticism. Empirical evidence has demonstrated its support for the BESSI-20 model (Wang et al., 2016). Social engagement is associated with extraversion, which indicates the ability to actively engage with others, encompassing skills in conversation, persuasion, and leadership. Cooperation is tied to agreeableness, reflecting the abilities necessary to maintain positive social interactions, such as perspective-taking, trust-building, and teamwork. Self-management is connected to conscientiousness, which entails the ability to effectively implement plans and achieve outcomes, including skills in time management, organization, and reliability (Santos et al., 2025).

Educational platforms offer a structured framework where computational thinking can be cultivated through interactive, scenario-based learning that aligns with both curricular objectives and real-world applications. They emphasize the importance of feedback within these platforms, where immediate responses to student actions facilitate understanding and engagement. Additionally, the incorporation of collaborative tools enables students to collaborate on projects, thereby enhancing social skills alongside computational competencies. The adaptive learning technologies implemented in these platforms customize educational experiences to fit individual learning styles and paces, thereby optimizing student learning outcomes. Collectively, these studies highlight how digital platforms can effectively leverage technology to promote computational thinking skills, preparing students for the complexities of contemporary academic and professional landscapes. This strategic use of technology in education establishes a vital connection to exploring the broader impacts of computational thinking education on societal and technological progress (Tariq et al., 2025) (Hauptman Komotar, 2022; Listyaningsih et al., 2023; Reza, 2016).

4.1 Bridging the Gap

The integration of gamification in education presents various challenges and concerns. The aim of this study was to assess the readiness of educators for Society 5.0. Insights gained from interviews have shed light on the potential challenges and concerns that teachers may encounter when attempting to incorporate gamification into elementary education, which aligns with our research objectives. The apprehensions voiced by educators regarding insufficient technological access, digital literacy, and training correspond with the broader challenges identified in academic literature. Similarly, worries about inadequate funding and resource limitations resonate with

previous studies on the financial obstacles associated with implementing innovative pedagogical methods (Amjad et al., 2025).

Furthermore, the ever-evolving landscape of the digital era, marked by swift technological progress and globalization, necessitates that project managers participate in ongoing professional development to ensure their relevance and efficacy also emphasizing soft skills for I5.0 facilitates the evaluation and creation of training programs that will sufficiently prepare project managers for both current and forthcoming project management situations (Santos et al., 2025).

The numerous advantages of integrating AI tools into Higher Education are counterbalanced by the inherent dangers of bias (such as distorted data) and the risk of fraud in both learning assessments and research processes, including plagiarism or the inappropriate use of AI-generated content.1 AI tools can be misapplied, prompting broader ethical, political, and economic concerns. From this perspective, the predominant influence of major technology firms in the advancement of AI further complicates the situation, as these corporations possess vested interests in the adoption and proliferation of the technology, which do not necessarily align with the public good and necessitate careful and critical examination, a task that has thus far received only limited attention. Nevertheless, there is a shared understanding of the essential role that educators—teachers, researchers, and university administrators—must fulfill in ensuring the "responsible" incorporation of AI into education. This requires, first and foremost, professional development and continuous training for higher education professionals—tailored according to their specific roles—alongside active collaboration between them and AI specialists from both laboratories and industry. By collaborating, educators and industry engineers and researchers can help unlock the potential of AI to enhance learning outcomes and promote knowledge production. In the realm of higher education specifically, AI is regarded as possessing significant potential: it can be utilized not only to create content and customize learning experiences but also to encourage deeper student engagement (Ruano-Borbalan, 2025).

Higher education institutions (HEIs), encompassing colleges and universities, remain the primary sources of national political officials, public administrators, business managers, educators, and civic leaders, among other professions. As noted by UNCTAD (2014), the functions of higher education in research, evaluation, information dissemination, and technology advancement are essential for social development and economic progress on a global scale. Consequently, given the public good service that education provides within societies, it is posited that higher education institutions act as semi-independent entities or adjuncts to governments, offering constructive criticism, strategic alternatives, and expert information that assist both the state and the public in forming well-considered opinions. Furthermore, the higher education institutions play a significant role in promoting upward social mobility and improving the lives of educated individuals, enhancing productivity and prosperity, supplying innovators to various industries, generating employment opportunities, producing knowledge, and contributing to policy development at the governmental level. Nevertheless, the global higher education sector has faced numerous challenges in recent years, with **declining student enrolment**, increasing operational costs, and evolving technological and educational demands being among the most pressing issues (Mpofu et al., 2024).

Industry 5.0 signifies a pivotal transformation towards sustainable development and social sustainability, incorporating human-centric principles, environmental accountability, and resilience into industrial operations. This methodology aspires to establish value oriented industries where profits serve as a secondary outcome rather than the primary objective, thereby ensuring sustainable, adaptable, and nimble growth that prioritizes human and societal requirements. A recent study further emphasized the significance of fostering a socially engaged future. It underscored the necessity of upholding human values and contributing to the comprehensive sustainability of both civilization and the planet (Gamberini & Pluchino, 2024).

5.0 METHODS FOR EXPLORATION CONDUCTED NVIVO APPROACH AND RESULT

The qualitative research approach aimed at investigating the global higher education sector has faced numerous challenges in recent years. These challenges include a decline in student enrolments, increasing operational costs, and the necessity to adapt to evolving technological and educational demands, which are among the most pressing issues (Mpofu et al., 2024) (Hauptman Komotar, 2022; Reza, 2016). The problem statement and objectives of this study are outlined as follows: 1. The impact of artificial intelligence on innovative teaching methodologies, language acquisition, and research-oriented disciplines is considerable. 2. Challenges encompass inadequate funding, alignment with the curriculum, time limitations, and access to technology. 3. There exists a deficiency in essential soft skills necessary for effectiveness within the framework of Industry 5.0. The urgency of research should highlight the need for exploration, especially in the realm of higher education, which has experienced a transformation due to the emergence of personalized learning experiences and enhanced student engagement. Education in Society 5.0 aims to create an optimal learning environment and equip students for future career opportunities.

The results derived from the literature review performed using the Nvivo methodology, which provides insights into scientific approaches, would fundamentally rest on a concentrated investigation within higher education. This encompasses themes, subthemes, and sub-sub-themes, all contributing to the advancement of science in higher education (Lovelace et al., 2020; Maher et al., 2018).

Further, the word tree of keyword for text search exploration pertains; the society i5.0, the higher education, students engagement and future carrier that displays to Figure 1 to Figure 4 as below:

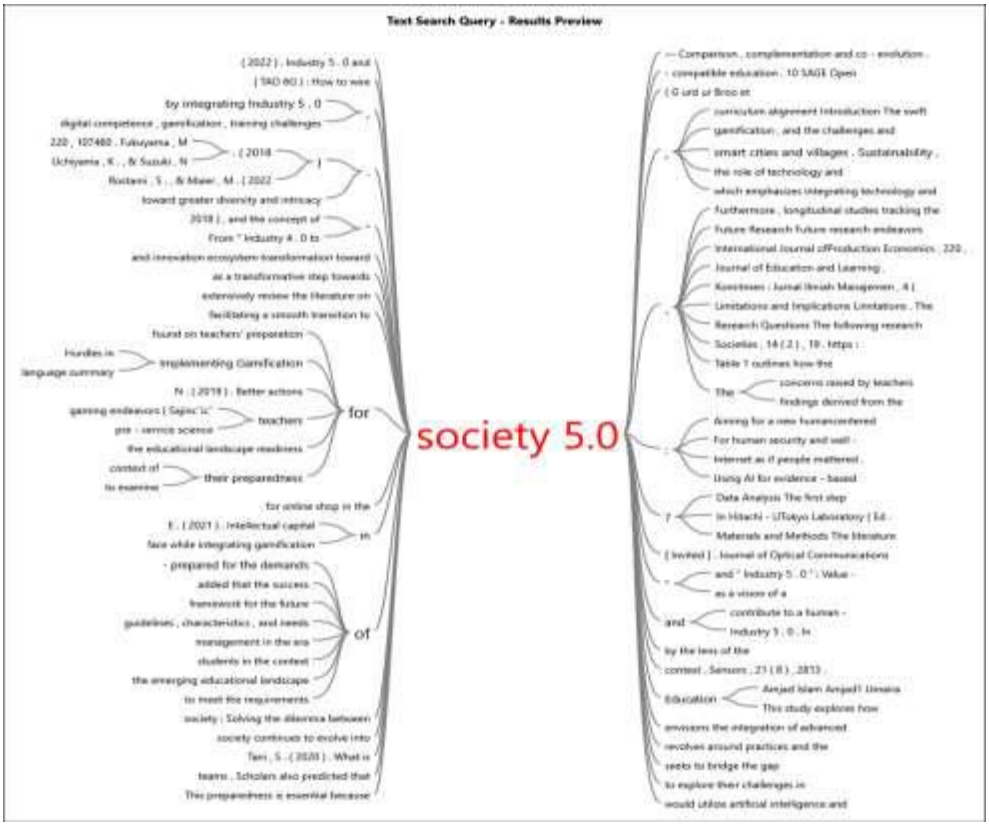

Figure 1. The word tree of keyword for text search exploration pertains; the society i5.0, the higher education

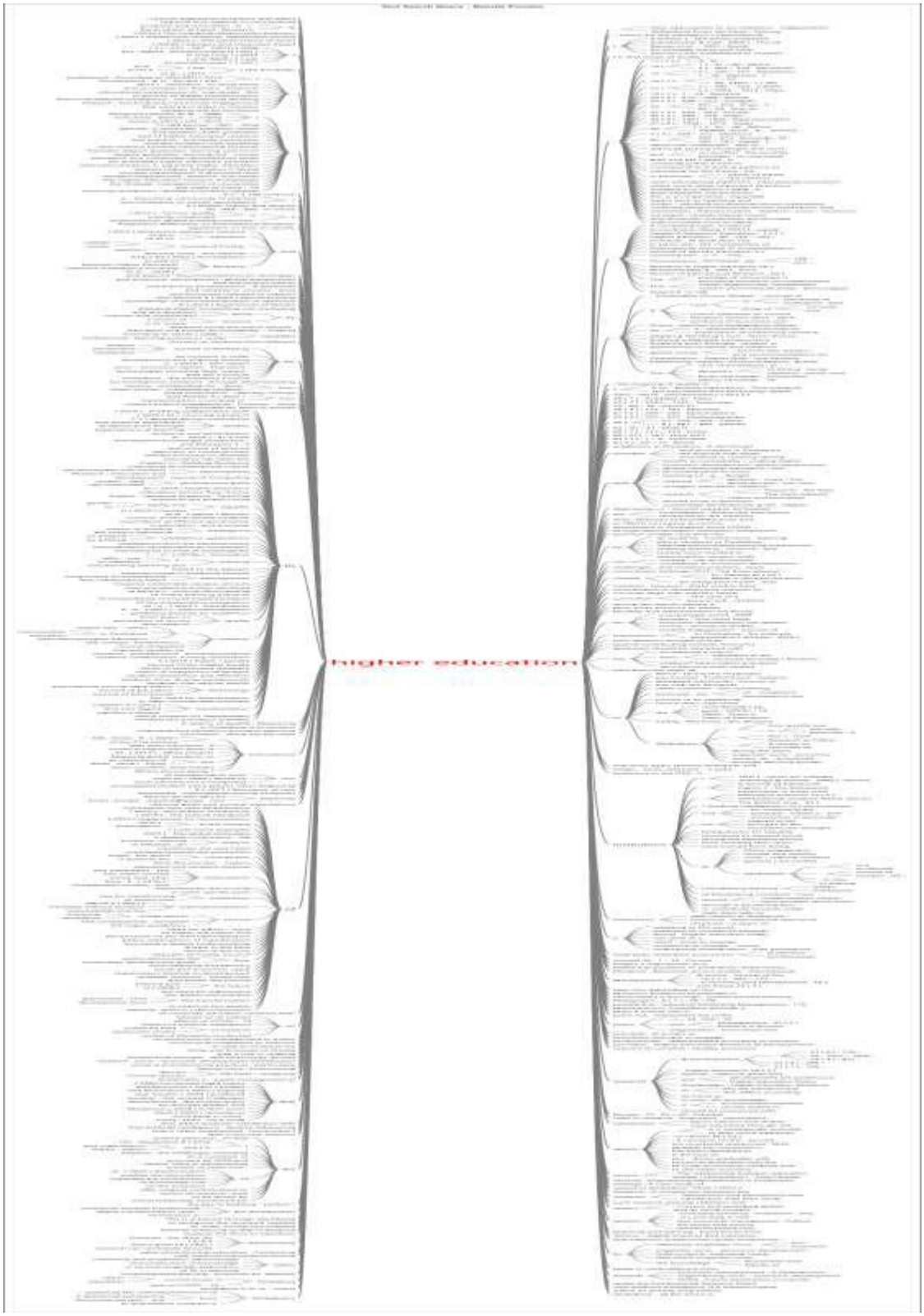

Figure 2. The word tree of keyword for text search exploration pertains; the higher education

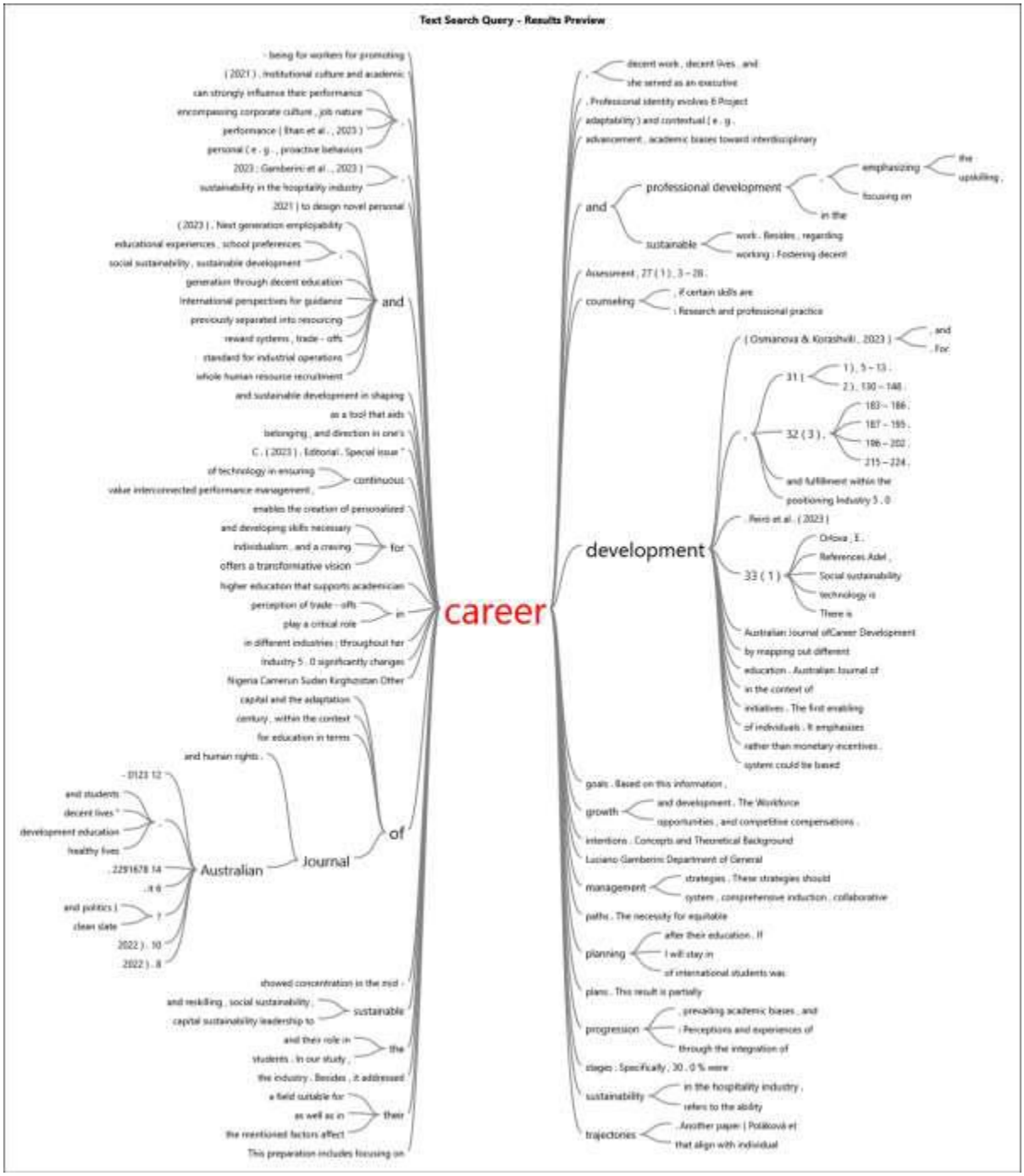

Figure 3. The word tree of keyword for text search exploration pertains; the society i5.0, the future career.

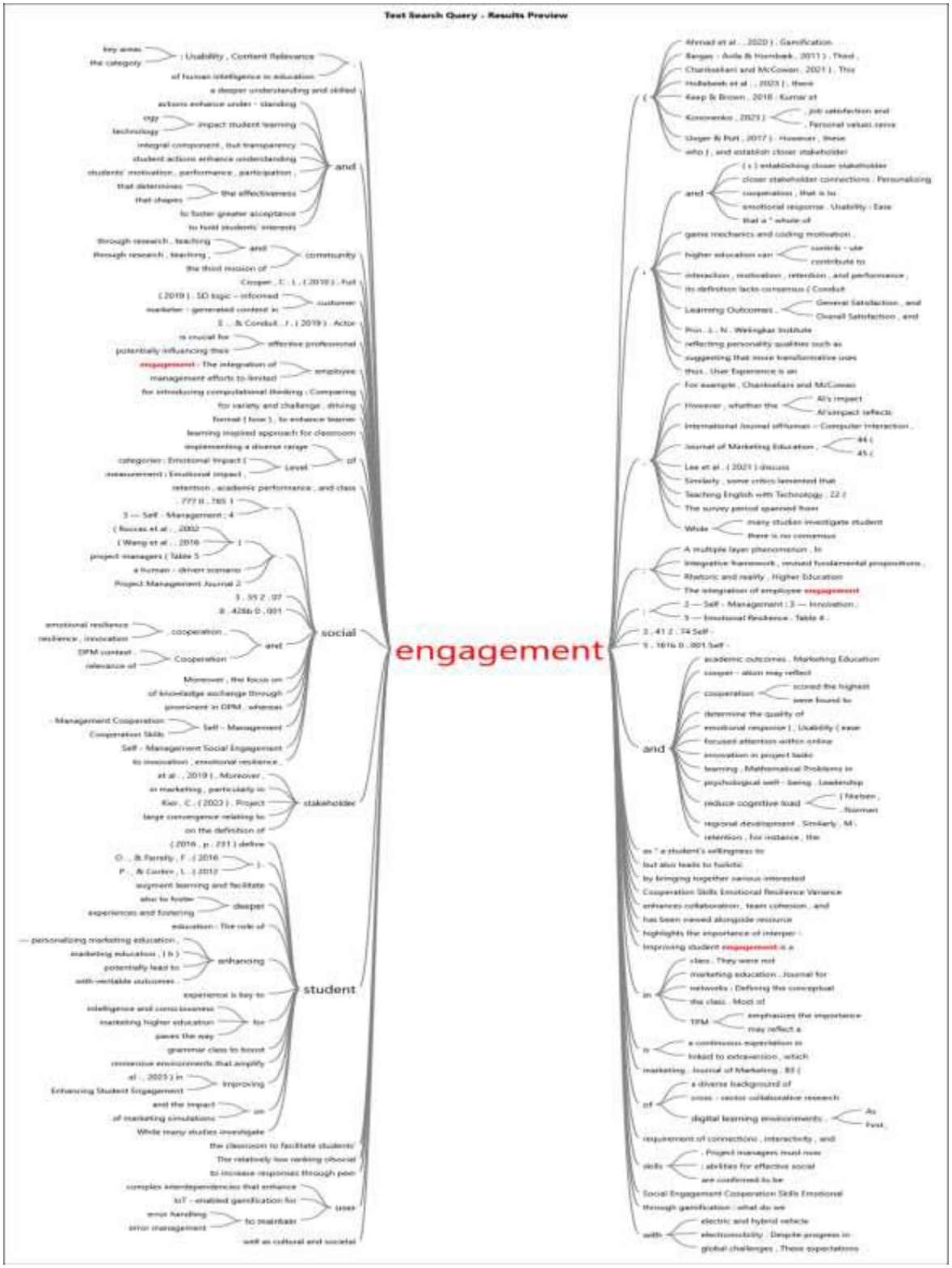

Figure 4. The word tree of keyword for text search exploration pertains; the society i5.0 and the student's engagement

Model finding:

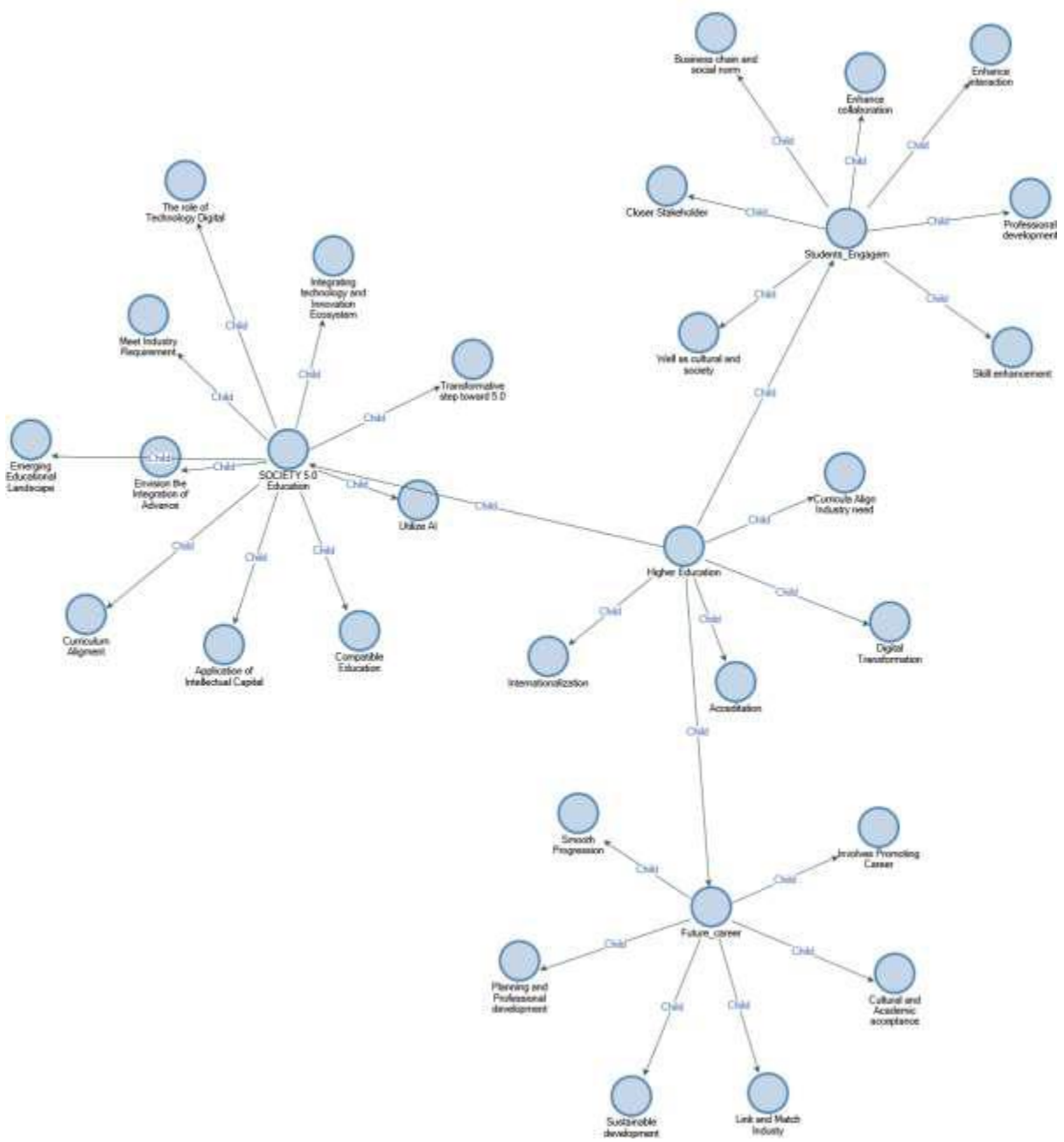

Figure 5. Model finding for interconnection of the society i5.0, the higher education, students engagement and future carrier
(source: Nvivo, 2025)

Premise finding

The NVivo approach for premise finding, which focuses on the interconnections within society 5.0, higher education, student engagement, and future careers as research innovations, is illustrated in Table 1 below:

Table 1. Premise finding for interconnection of the society i5.0, the higher education, students' engagement and future carrier

Name	Description
Higher Education	
Accreditation	The accreditation for advanced learning holds substantial importance, serving as a symbol of significant recognition for exceptional accomplishments. A significant achievement or success that stands out due to its importance, difficulty, or exceptional nature and it is considered an outstanding accomplishment, remarkable achievement, noteworthy success, impressive feat.
Curricula Align Industry need	Curricula should be aligned with the needs of the industry. It is essential for educational programs to reflect the requirements of the job market.
Digital Transformation	The digital transformation process within the realm of global higher education is vital for future employment prospects. This progression is necessary for aligning with the requirements of the job market in the years ahead.
Future career	
Cultural and Academic acceptance	The recognition and endorsement of career prospects in the arts by students in higher education within a globally challenging context.
Involves Promoting Career	This initiative focuses on advocating for career advancement and the various opportunities available in the arts for students in higher education, particularly within a globally competitive landscape, to achieve professional success.
Link and Match Industry	The Link and Match Industry encompasses a well-established environment that promotes career development and opportunities in the arts for higher education students. This is particularly relevant in a globally competitive landscape, where the pursuit of job success is paramount.
Planning and Professional development	The planning and professional development, along with a well-established environment, can significantly contribute to promoting career opportunities in the arts for higher education students. This is particularly important in a globally challenging context, as it enables them to achieve job success.
Smooth Progression	The Smooth Progression, coupled with a well-established environment, can greatly enhance the promotion of career opportunities in the arts for students in higher education. This aspect is especially crucial in a globally challenging context, as it allows them to attain success in their careers.
Sustainable development	The advancement of sustainability, coupled with a robust environmental framework, can greatly enhance the availability of career prospects in the arts for students pursuing higher education. This aspect is especially crucial in a context that presents global challenges, as it empowers them to attain professional success.
Internationalization	The development of internationalization in education, coupled with a robust environment, can greatly enhance career prospects in the arts for students in higher education. This is especially crucial in a globally competitive

	landscape, as it allows them to attain success in their careers.
SOCIETY 5.0 Education	
Application of Intellectual Capital	The application of Intellectual Capital based on the SOCIETY 5.0 Education framework seeks to attain substantial educational results within a worldwide setting.
Compatible Education	The education that aligns with the SOCIETY 5.0 Education framework aims to achieve significant educational outcomes on a global scale.
Curriculum Alignment	The alignment of the curriculum and the provision of education that is well-suited to the SOCIETY 5.0 Education framework aim to achieve significant educational outcomes on a global scale.
Emerging Educational Landscape	The evolving educational environment requires adaptable curriculum alignment and an education system that is well-suited to the Society 5.0 Education framework, which aims to achieve significant educational outcomes on a global scale.
Envision the Integration of Advance	Imagine the amalgamation of Advance and the transforming educational landscape necessitates a flexible curriculum alignment alongside an educational system that aligns with the Society 5.0 Education framework. This framework aspires to attain substantial educational results on a worldwide level and across various industries in the context of i5.0.
Integrating technology and Innovation Ecosystem	The integration of technology and the Innovation Ecosystem, along with the envisioning of the fusion of advanced methodologies, requires a curriculum that is adaptable and an educational system that is in harmony with the Society 5.0 Education framework. This framework aims to achieve significant educational outcomes on a global scale and across diverse sectors within the i5.0 context.
Meet Industry Requirement	To meet industry demands, the incorporation of technology and the innovation ecosystem, coupled with the conceptualization of merging advanced methodologies, necessitates a curriculum that is flexible and an educational system that aligns with the Society 5.0 Education framework. This framework aspires to attain substantial educational results on a worldwide level and across various sectors within the i5.0 context.
The role of Technology Digital	The function of Technology Digital in order to satisfy the requirements of the industry, the integration of technology along with the innovation ecosystem, combined with the idea of blending advanced methodologies, requires a curriculum that is adaptable and an educational system that is in harmony with the Society 5.0 Education framework. This framework aims to achieve significant educational outcomes on a global scale and across different sectors within the i5.0 context.
Transformative step toward 5.0	A transformative advancement towards 5.0 requires a curriculum that is adaptable and an educational system that is in harmony with the Society 5.0 Education framework. This framework aims to achieve significant educational outcomes on a global scale and across multiple sectors within the

	i5.0 context.
Utilize AI	Employing AI for a transformative progression towards Society 5.0 necessitates a curriculum that is flexible and an educational system that aligns with the Society 5.0 Education framework. This framework seeks to attain substantial educational results on a worldwide level and across various sectors within the i5.0 context.
Students Engagement	Student engagement in higher education is driven by the principles of Society 5.0, which aims to connect educational institutions with industry vacancies for future employment opportunities. Furthermore, it is essential to enhance the curricula in higher education to align with the link-and-match concept, thereby preparing students for successful careers in the emerging job market.
Business chain and social norm	The business chain and social norms that underpin student engagement in higher education are influenced by the tenets of Society 5.0, which seeks to bridge the gap between educational institutions and industry job openings for prospective employment opportunities. Moreover, it is crucial to improve the curricula in higher education to correspond with the link-and-match concept, thus equipping students for prosperous careers in the evolving job market.
Closer Stakeholder	The foundation and support of student engagement in higher education, as emphasized by Closer Stakeholder, is motivated by the principles of Society 5.0. This framework seeks to bridge the gap between educational institutions and industry job openings, facilitating future employment opportunities. Additionally, it is crucial to improve higher education curricula to correspond with the link-and-match concept, thus equipping students for prosperous careers in the evolving job market.
Enhance collaboration	Based on the enhancement of collaboration as the foundation and support for student engagement in higher education, the principles of Society 5.0 drive this initiative. Society 5.0 seeks to bridge the gap between educational institutions and industry vacancies, facilitating future employment opportunities. Additionally, it is crucial to improve the curricula in higher education to align with the link-and-match concept, thus equipping students for successful careers in the evolving job market.
Enhance interaction	Enhancing interaction serves as the foundation and support for student engagement in higher education, this is propelled by the principles of Society 5.0. This framework seeks to bridge educational institutions with industry job openings, facilitating future employment opportunities. Additionally, it is crucial to improve the curricula in higher education to correspond with the link and- match concept, thus equipping students for prosperous careers in the evolving job market.
Professional Development	Professional development serves as the foundation and support for student engagement in higher education, guided by the principles of Society 5.0. This framework seeks to bridge educational institutions with industry job openings, facilitating future employment opportunities. Additionally, it is crucial to improve higher education curricula to align with the link-and-match concept, thus equipping students for prosperous careers in the

	evolving job market.
Skill enhancement	The improvement of skills serves as the foundation and support for student engagement in higher education, propelled by the tenets of Society 5.0. This initiative seeks to bridge the gap between educational institutions and industry job openings, facilitating future employment prospects. Additionally, it is crucial to refine the curricula in higher education to correspond with the link-and-match concept, thus equipping students for prosperous careers in the evolving job market.
Well as cultural and Society	The foundation of student engagement in higher education is significantly influenced by cultural and societal factors, driven by the principles of Society 5.0. This framework seeks to bridge the gap between educational institutions and industry job openings, facilitating future employment opportunities. Additionally, it is crucial to improve higher education curricula to align with the link-and-match concept, thus equipping students for successful careers in the evolving job market.

(Source: NVivo approach, 2025)

6.0 DISCUSSION AND CONCLUSION

AI applications are believed to possess significant potential to fundamentally transform higher education and research. The primary aspects emphasized include: (1) AI's purported capacity to tailor learning experiences to individual needs. (2) The prospective automation of administrative responsibilities. (3) The potential assistance for research endeavors (Ruano-Borbalan, 2025). Artificial Intelligence marks a crucial advancement in merging the distinctions between formal and informal education, as well as facilitating the extensive "distribution" of learning and knowledge, particularly in conjunction with other digital technologies (Lei & Liu, 2025; Lopez-Lopez & Iniesta, 2025). however, its complete potential within the educational sector remains to be fully harnessed, and there is no assurance that it will be achieved to the degree anticipated by techno-prophetic expectations (Lopez-Lopez & Iniesta, 2025).

A crucial element of Industry 5.0 is its focus on the mass personalization of products, the establishment of smart factories, and the collaboration of the workforce with the environment. This concept encompasses the idea of a smart organization. This methodology transcends the technological underpinnings of Industry 4.0, advocating for initiatives aimed at social transformation and the enhancement of human resources. Moreover, Industry 5.0 reinstates a human-centered perspective in business, aspiring to generate more employment opportunities, boost productivity, and respond to the evolving needs and values of the workforce. The tenets of social sustainability, which include investing in human necessities, justice, and the respect for human rights, align with the goals of Industry 5.0. This technological revolution seeks to restore the significance of human beings by empowering the workforce through fair and inclusive training and development initiatives. It also acknowledges the necessity of democratic and political discourse in tackling uncertainties and conflicts that emerge in light of scientific progress and technological innovation. The upskilling and reskilling of the workforce are vital for the prosperity of Industry 5.0. Technical competencies are essential to optimize investments in smart factories. Industry leaders frequently encounter a shortage of AI talent necessary for the AI-driven industrial

revolution. The facilitators of Industry 5.0 comprise infrastructure, communication, and automation technologies, which play a pivotal role in enhancing the quality of working life, boosting efficiency, and fostering innovation. Among the technologies associated with Industry 5.0 are digital twins and digital simulations, which are digital replicas of physical objects or systems that enable real-time monitoring, analysis, and optimization of industrial processes (Gamberini & Pluchino, 2024).

Finally, a revitalized humanism, shaped by the influence of techno-digital and A.I. technologies on education, research, and society, lies at the core of the challenges faced by higher education and research methodologies. These issues are exactly the type that must be tackled concerning the processes of learning and teaching, as well as the generation of knowledge within higher education frameworks. This aligns perfectly with the suggestions put forth by global public policy entities (such as UNESCO, the European Union, the International Science Council, various academies, and research organizations) advocating for the adoption and application of new technoscientific and A.I. instruments, while simultaneously encouraging the integration of science, art, humanities, and the behavioral and social sciences (Ruano-Borbalan, 2025).

The computational thinking is regarded as a fundamental method for cultivating problem-solving abilities that enable students to break down intricate issues and tackle them efficiently. This concept encompasses not only programming capabilities but also a mindset applicable across various fields, thus expanding its usefulness and significance beyond conventional computing domains. Furthermore, computational thinking can be integrated into educational programs through initiatives that promote creativity and structured problem-solving (Tariq et al., 2025).

Industry 5.0 profoundly transforms career and professional development, highlighting the necessity for new skills, ongoing learning, and adaptability in a swiftly changing labor market, as well as the significance of continuous education and skill enhancement essential for career and professional advancement in today's work environment. The article emphasized the necessity for employees to perpetually improve their skills, particularly in acquiring digital competencies, and to gain new knowledge through lifelong learning. Workers must remain receptive to change and be prepared to adjust to new technologies and work processes. They should foster a growth mindset and welcome new challenges and opportunities for professional advancement. Recently, the third stage of the twenty-first century, in the realm of career counseling, suggests that if certain skills become obsolete, individuals can “re-skill, up-skill, and create-skill” to align with the evolving demands of the contemporary workplace. This underscores the importance of being capable of developing new skills or modifying existing ones to maintain relevance and address the changing requirements of the workforce (Goswami & Narayanan, 2023; Thome et al., 2019) (Gamberini & Pluchino, 2024).

The transformative capabilities of Industry 5.0 (I5.0) in enhancing supply chain performance (SCP) have emerged as a significant area of interest for many supply chain (SC) managers. This research investigates the substantial influence of I5.0 on SCP, emphasizing three critical dimensions: Efficiency, Visibility, and Responsiveness. It sheds light on the dynamic interactions among these dimensions, illustrating that enhanced visibility fosters greater responsiveness and efficiency. Although the enabling technologies of I5.0 possess considerable potential for various applications,

this study focuses specifically on seven I5.0 technologies recognized as particularly impactful within the SC framework (Nazarian & Khan, 2024) (Berenguer et al., 2024; Sinha, 2020; Zhang & Murphy, 2009.

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Authors Contribution

Wilhelmus Hary Susilo: Idea/ newest notions and Phenomenon, conceptual framework, Literature review, Result and Discussion improvement and making Conclusion for future research.

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The prime data and excel data csv for input within the NVivo software was already exist in the authors folder file.

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